

REMARKS

Claims 1-25 and 27-44 remain in the present application. Claims 2 and 44 are amended herein. Applicants respectfully submit that no new matter has been added as a result of the claim amendments. Applicants respectfully request further examination and reconsideration of the rejections based on the arguments set forth below.

Allowable Subject Matter

Applicants would like to thank the Examiner for the indication that Claims 24, 36-37 and 43-44 would be allowable if rewritten in independent form.

Claim Objections

Claims 2 and 44 are objected to due to informalities. Applicants respectfully submit that Claims 2 and 44 as amended overcome this objection.

Claim Rejections – 35 U.S.C. §103

Claims 28-30

Claims 28-30 are rejected under 35 U.S.C. §103(a) as being unpatentable over United States Patent Number 6,188,394 to Morein et al. (hereafter referred to as "Morein") in view of "Fast Spheres, Shadows, Textures, Transparencies, and Image Enhancements in Pixel-Planes" by Fuchs et al. (hereafter referred to as "Fuchs"). Applicants have reviewed the cited references and respectfully submit that the embodiments of the present invention as recited in Claims 28-30 are not rendered obvious by Morein in view of Fuchs for the following reasons.

Applicants respectfully direct the Examiner to independent Claim 28 that recites a method for reading a frame buffer comprising (emphasis added):

receiving an address corresponding to a pixel;
transforming the received address into multiple subpixel addresses;
reading at least two subpixels from the frame buffer using at least
two of the multiple subpixel addresses, wherein the frame buffer
comprises a plurality of pixels, wherein each pixel comprises a plurality of
subpixels; and
blending the at least two subpixels to create a pixel value for said
pixel.

Independent Claim 30 recites limitations similar to those of independent Claim 28. Claim 29 depends from independent Claim 28 and recites further limitations to the claimed invention.

Page 17 of the rejection states that Morein fails to teach or suggest the limitations of “transforming the received address into multiple subpixel addresses” as recited in independent Claim 28. Applicants concur.

Applicants respectfully submit that Fuchs, either alone or in combination with Morein, also fails to teach or suggest the limitations of “transforming the received address into multiple subpixel addresses” as recited in independent Claim 28. As recited and described in the present application, a received address is transformed into multiple subpixel addresses. At least two subpixels are read from the frame buffer using at least two of the multiple subpixel addresses.

In contrast to the claimed embodiments, Applicants understand Fuchs to teach determination of a single subpixel address for a given pixel address. For example, Fuchs teaches that a subpixel address is determined for sampling by determining a shift of (xoffset, yoffset) which is applied to a pixel address of (x, y) to determine the subpixel address of (x+xoffset, y+yoffset) (page 119). As such, Fuchs teaches away from the claimed embodiments by teaching transforming an

address into a *single* subpixel address instead of *multiple* subpixel addresses as claimed.

Furthermore, Applicants respectfully submit that no suggestion or motivation to combine Morein and Fuchs in the claimed fashion has been shown sufficiently to establish a *prima facie* case of obviousness, as discussed in MPEP §2143. Applicants respectfully submit that neither Morein nor Fuchs, either explicitly or inherently, provide a motivation or suggestion to combine the two references in the claimed fashion. Moreover, the references explicitly teach away from the combination. For example, Morein is directed to compressing and reducing the size of pixel sample sets to conserve memory resources (col. 2, lines 10-26), while Fuchs is directed to a costlier algorithm with increased sample size and multiple memories to enable successive refinement of the image over several passes (pages 119-120). As such, Applicants respectfully submit that one would not be motivated to combine Morein's invention directed to conserving memory resources and reducing sampling size with Fuchs' algorithm which is more costly, requires an increased sample size, and requires more memory resources to implement the algorithm. Consequently, Applicants respectfully submit that one of ordinary skill in the art would not be motivated to combine Morein and Fuchs in the claimed fashion.

For these reasons, Applicants respectfully submit that independent Claim 28 is not rendered obvious by Morein in view of Fuchs, thereby overcoming the 35 U.S.C. §103(a) rejections of record. Since independent Claim 30 recites limitations similar to those discussed above with respect to independent Claim 28, independent Claim 30 also overcomes the 35 U.S.C. §103(a) rejection of record. Since dependent Claim 29 recites further limitations to the invention

claimed in independent Claim 28, dependent Claim 29 is also not rendered obvious by Morein in view of Fuchs. Therefore, Claims 28-30 are allowable.

Claims 1-4, 9-10, 13, 15-17, 19, 21-23 and 32-35

Claims 1-4, 9-10, 13, 15-17, 19, 21-23 and 32-35 are rejected under 35 U.S.C. §103(a) as being unpatentable over Morein in view of United States Patent Number 6,366,289 to Johns (hereafter referred to as "Johns"). Applicants have reviewed the cited references and respectfully submit that the embodiments of the present invention as recited in Claims 1-4, 9-10, 13, 15-17, 19, 21-23 and 32-35 are not rendered obvious by Morein in view of Johns for the following reasons.

Applicants respectfully direct the Examiner to independent Claim 1 that recites a method for providing antialiased memory access comprising (emphasis added):

receiving a request to access a memory address; and
determining if the memory address is within a virtual frame buffer
and, if so, performing the following:
 transforming the memory address into at least one physical
 address within a frame buffer utilized for antialiasing, wherein said
 frame buffer is a single memory for containing data of a plurality of
 subpixels corresponding to a pixel of said virtual frame buffer; and
 accessing data of a subpixel at the at least one physical
 address within the frame buffer.

Independent Claims 9, 15, 21 and 32 recite limitations similar to independent Claim 1. Claims 2-4, 10, 13, 16-17, 19, 22, 23 and 33-35 depend from their respective independent Claims and recite further limitations to the claimed invention.

The rejection states that Morein fails to teach or suggest the limitations of “determining if the memory address is within a virtual frame buffer” as recited in independent Claim 1. Applicants concur.

Applicants respectfully submit that Johns, either alone or in combination with Morein, also fails to teach or suggest the limitations of “determining if the memory address is within a virtual frame buffer” as recited in independent Claim 1. As recited and described in the present application, a determination is made as to whether a memory access is within a virtual frame buffer.

In contrast to the claimed embodiments, Applicants fail to find any teaching in Johns of a determination as to whether a memory access is within a virtual frame buffer. Further, Johns teaches that request signals from clients are routed to the virtual frame buffer controller without such a determination (see steps 400 and 402 of Figure 4; col. 9, lines 51-61). As such, Applicants respectfully submit that Johns teaches away from the claimed embodiments.

Applicants respectfully submit that Morein fails to teach or suggest the limitations of “transforming the memory address into at least one physical address within a frame buffer utilized for antialiasing” as recited in independent Claim 1. As recited and described in the present application, a memory address is transformed into at least one physical address within a frame buffer utilized for antialiasing.

In contrast to the claimed embodiments, Applicants understand Morein to teach a pointer to a selected memory address in a sample memory (col. 2, lines 20-22), where the sample memory is main system memory. For example,

Morein teaches that "sample memory 38 is the main memory of the system" (col. 5, lines 49-51). However, a main system memory as taught by Morein is very different from a frame buffer utilized for antialiasing as claimed. Thus, Applicants respectfully submit that Morein teaches away from the claimed embodiments.

Applicants respectfully submit that Johns, either alone or in combination with Morein, also fails to teach or suggest the limitations of "transforming the memory address into at least one physical address within a frame buffer utilized for antialiasing" as recited in independent Claim 28. In contrast to the claimed embodiments, Applicants understand Johns to teach that the physical address is within the system memory (col. 7, lines 57-62). Additionally, Applicants fail to find any teaching or suggestion that the physical address is within a frame buffer *utilized for antialiasing* as claimed. As such, Applicants respectfully submit that Johns also teaches away from the claimed embodiments.

For these reasons, Applicants respectfully submit that independent Claim 1 is not rendered obvious by Morein in view of Johns, thereby overcoming the 35 U.S.C. §103(a) rejections of record. Since independent Claims 9, 15, 21 and 32 contain limitations similar to those discussed above with respect to independent Claim 1, independent Claims 9, 15, 21 and 32 also overcome the 35 U.S.C. §103(a) rejections of record. Since dependent Claims 2-4, 10, 13, 16-17, 19, 22-23 and 33-35 recite further limitations to the invention claimed in their respective independent Claims, dependent Claims 2-4, 10, 13, 16-17, 19, 22-23 and 33-35 are also not rendered obvious by Morein in view of Morein. Therefore, Claims 1-4, 9-10, 13, 15-17, 19, 21-23 and 32-35 are allowable.

Claims 5-6, 11-12, 18 and 25

Claims 5-6, 11-12, 18 and 25 are rejected under 35 U.S.C. §103(a) as being unpatentable over Morein in view of Johns, and further in view of United States Patent Number 5,664,162 to Dye (hereafter referred to as "Dye"). Applicants have reviewed the cited references and respectfully submit that the embodiments of the present invention as recited in Claims 5-6, 11-12, 18 and 25 are not rendered obvious by Morein in view of Sturges and further in view of Dye for the following reasons.

Applicants respectfully submit that Dye, either alone or in combination with Morein and/or Johns, fails to cure the deficiencies of the Morein/Johns combination discussed above with respect to independent Claims 1, 9, 15 and 21. Specifically, Applicants respectfully submit that Dye also fails to teach or suggest "determining if the memory address is within a virtual frame buffer" and "transforming the memory address into at least one physical address within a frame buffer utilized for antialiasing" as recited in independent Claims 1, 9, 15 and 21. Consequently, since Claims 5-6, 11-12, 18 and 25 recite further limitations to the invention claimed in their respective independent Claims, Claims 5-6, 11-12, 18 and 25 are not rendered obvious by Morein in view of Johns and further in view of Dye. Thus, Claims 5-6, 11-12, 18 and 25 overcome the 35 U.S.C. §103(a) rejections of record, and are therefore allowable.

Claims 7-8, 14, 20, 27 and 38-42

Claims 7-8, 14, 20, 27 and 38-42 are rejected under 35 U.S.C. §103(a) as being unpatentable over Morein in view of Johns, and further in view of United States Patent Number 5,594,854 to Baldwin et al. (hereafter referred to as "Baldwin"). Applicants have reviewed the cited references and respectfully

submit that the embodiments of the present invention as recited in Claims 7-8, 14, 20, 27 and 38-42 are not rendered obvious by Morein in view of Johns and further in view of Baldwin for the following reasons.

Applicants respectfully submit that Baldwin, either alone or in combination with Morein and/or Johns, fails to cure the deficiencies of the Morein/Johns combination discussed above with respect to independent Claims 1, 9, 15, 21 and 32. Specifically, Applicants respectfully submit that Baldwin also fails to teach or suggest the limitations of “determining if the memory address is within a virtual frame buffer” and “transforming the memory address into at least one physical address within a frame buffer utilized for antialiasing” as recited in independent Claims 1, 9, 15, 21 and 32. Consequently, since Claims 7-8, 14, 20, 27 and 38-42 recite further limitations to the invention claimed in their respective independent Claims, Claims 7-8, 14, 20, 27 and 38-42 are not rendered obvious by Morein in view of Johns and further in view of Baldwin. Thus, Claims 7-8, 14, 20, 27 and 38-42 overcome the 35 U.S.C. §103(a) rejections of record, and are therefore allowable.

Claim 31

Claims 31 is rejected under 35 U.S.C. §103(a) as being unpatentable over Morein in view of Fuchs, and further in view of United States Patent Number 7,158,148 to Toji et al. (hereafter referred to as “Toji”). Applicants have reviewed the cited references and respectfully submit that the embodiments of the present invention as recited in Claim 31 are not rendered obvious by Morein in view of Fuchs and further in view of Toji for the following reasons.

Applicants respectfully submit that Toji, either alone or in combination with Morein and/or Fuchs, fails to cure the deficiencies of the Morein/Fuchs combination discussed above with respect to independent Claim 30. Specifically, Applicants respectfully submit that Toji also fails to teach or suggest “transforming the received address into multiple subpixel addresses” as recited in independent Claim 30. Consequently, since Claim 31 recites further limitations to the invention claimed in independent Claim 30, Claim 31 is not rendered obvious by Morein in view of Fuchs and further in view of Toji. Thus, Claim 31 overcomes the 35 U.S.C. §103(a) rejections of record, and is therefore allowable.

CONCLUSION

Applicants respectfully submit that Claims 1-25 and 27-44 are in condition for allowance and Applicants earnestly solicit such action from the Examiner.

The Examiner is urged to contact Applicants' undersigned representative if the Examiner believes such action would expedite resolution of the present application.

Please charge any additional fees or apply any credits to our PTO deposit account number: 50-4160.

Respectfully submitted,

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Dated: 7/25, 2007

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